

REMARKS

Claims 1-11, 13-15, 18, 20-28, 30-35, 37 and 38 are currently pending in the subject application, and are presently under consideration. Claims 1-11, 13-15, 18, 20-28, 30-35, 37 and 38 are rejected. Claim 18 has been indicated as allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Claim 15 has been amended to incorporate allowable claim 18. Favorable reconsideration of the application is requested in view of the comments herein.

I. Rejection of Claims 1, 2, 9, 11, 13, 14, 25, 26-28, 30-35 and 37 under 35 U.S.C. 103(a)

Claims 1, 2, 9, 11, 13, 14, 15, 26-28, 30-35 and 37 have been rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,701,445 to Majos ("Majos"), in view of U.S. Patent No. 7,127,022 to Dieguez ("Dieguez"). Withdrawal of this rejection is respectfully requested for at least the following reasons.

In rejecting claim 1, the Office Action contends that a module 4 (hereinafter "up/down counter 4") disclosed in Majos provides a signal based on a comparison of a value of a frequency for an input signal and a value of a desired frequency, as does the comparator recited in claim 1 (See Office Action, Page 3). Applicant's representative respectfully disagrees. However, such a contention appears to contradict the admission in the Office Action that Majos does not teach a frequency value represents a frequency value of the signal (Office Action, Page 4). The up/down counter 4 disclosed in Majos adjusts a control voltage (via a digital-to-analog converter (DAC) 5) of a voltage controlled oscillator (VCO; See Majos, Col. 8, Lines 16-35). In contrast, the comparator recited in claim 1 provides a comparator signal based on a comparison of a value of a frequency for an input signal and a value of a desired frequency (from a detector). Thus, the up/down counter 4 disclosed in Majos performs a substantially different function from the comparator recited in claim 1. This difference stems from the inclusion of a detector in claim 1 that provides a value that represents the determined frequency of the input signal, whereas Majos employs a frequency comparator 3 to provide two one-bit signals, H- and H+ and a sampling signal HE as inputs to the up/down counter 4 (See Majos, FIG. 1).

In Majos, the inputs to the up/down counter 4 are two one-bit signals, H- and H+ and a sampling signal HE (See Majos, FIG. 1). None of these inputs (H-, H+ and HE) to the up/down

counter 4 disclosed in Majos correspond to the values of the frequency of the input signal and desired frequency, as recited in claim 1. That is, in contrast to the values of frequency recited in claim 1, none of the inputs (H-, H+ and HE) to the up/down counter 4 disclosed in Majos would allow ascertainment of the frequency of either input signal or the desired frequency. Instead, the input (H-, H+ and HE) to the up/down counter 4 disclosed in Majos provide only a relative indication of a comparison of frequencies.

Additionally, the Office Action admits that up/down counter 4 is not a comparator, and that Majos does not teach or suggest that a frequency value represents a frequency value of an (input) signal (See Office Action, Pages 3-4). However, the Office Action contends that Dieguez makes up for the deficiencies of Majos. Specifically, the Office Action cites Dieguez for Dieguez's disclosure of a digitally controlled oscillator (DCO) filter and control 204 that compares a number of phase lead errors to a number of phase lag errors per update period (See Office Action, Page 4, citing Col. 10, Lines 24-40 of Dieguez). The Office Action also cites Dieguez for its disclosure of signals that can include encoded information about the magnitude of difference between two clock signals (See Office Action, Page 4, Citing Col. 6, lines 40-45 of Dieguez). Applicant's representative respectfully disagrees.

Applicant's representative notes that the up/down counter 4 disclosed in Majos performs a substantially different function from the comparator recited in claim 1. Thus, Applicant's representative respectfully submits that the name given to the up/down counter 4 in Majos is immaterial for purposes of patentability with respect to claim 1. That is, even had that the up/down counter 4 disclosed in Majos had been labeled "comparator 4," nothing in Majos would teach or suggest that the "comparator 4" would provide a comparison signal based on a comparison of a value of a frequency for an input signal and a value of a desired frequency, as does the comparator recited in claim 4. Moreover, nothing in the cited sections of Dieguez, or elsewhere in Dieguez teaches or suggests that such encoded information is compared. Thus, because of the differences between the DCO filter and control 204 of Dieguez and the comparator taught by Majos, the Office Action seeks to combine incompatible concepts to achieve results that would be unexpected to one of ordinary skill in the art. Thus, Applicant's representative respectfully submits that regardless of the terminology employed in Majos and

Dieguez, no process or structure taught in Majos or Dieguez, taken alone or in combination, teaches or suggests the comparator recited in claim 1.

Moreover, the Office Action contends that in one embodiment of Majos, (illustrated in FIG. 5), a frequency of an input data signal (Hr) is known, and that in such an embodiment, when both H- and H+ are logical '0', thus indicating that signals 1H and 1E have equal frequencies, that H- and H+ correspond to the values of frequency recited in claim 1 (See Office Action, Page 4). As stated above, the comparator recited in claim 1 provides a comparison signal based on a comparison of a value of a frequency of an input signal and a comparison of a value of a desired frequency. Applicant's representative respectfully submits that regardless of whether certain information (which is not input into the up/down counter 4) could be employed to ascertain the frequency of signal 1H when signal 1H has a frequency equal to signal at 1E is not material. There is no teaching or suggestion in Majos and no other evidence of record to support a position that one of ordinary skill in the art would deem the results predictable, as such a proposition would require adding circuitry, complexity and cost in to the system of Majos in order do something unnecessary and incompatible with the intended purpose of Majos. That is, the position in the Office Action seems to be based on speculation or possibilities and not based on a rational underpinning.

The Office Action still further argues that one of ordinary skill would have been motivated to combine and modify the teachings of Majos and Dieguez to determine a frequency value as that provides more information (See Office Action, Page 4). Applicant's representative respectfully submits that the reasons provided by the Office Action for the motivation to combine and modify the teachings of Majos and Dieguez are improper. The U.S. Court of Appeals for the Federal Circuit ("Federal Circuit") has found that one of ordinary skill in the art would not have reasonably elected trading the benefit of security for that of convenience, since tradeoffs concern what is feasible, while motivation to combine requires what is desirable, not just what is feasible. *Winner Int'l Royalty Corp. v. Ching-Rong Wang*, 202 F.3d 1340, 1349 53 U.S.P.Q.2d 1580 (Fed. Cir. 2000). Analogously, Applicant's representative respectfully submits that the additional complexity and cost added to the system disclosed in Majos that would be required for the system in Majos to read on claim 1 would result in a tradeoff between complexity, as well as cost, and information provided. Since the Office Action has failed to

show how the teachings of Majos or Dieguez (or what is known in the art) would indicate that the additional information (e.g., frequency value) is desirable, Applicant's representative respectfully submits that the motivation provided by the Office Action to combine and modify the teachings of Majos and Diguez would constitute a tradeoff that is insufficient to establish obviousness. Therefore, Majos taken in view of Dieguez does not teach or suggest the system of claim 1 since neither Majos nor Dieguez (taken alone or in combination) teaches or suggests any structure or process that corresponds to the comparator recited in claim 1. Moreover, since the Office Action fails to provide any other evidence sufficient to establish a *prima facie* case of obviousness with respect to claim 1, claim 1, as well as claims 2, 9, 11, 13 and 14 depending therefrom are patentable.

Claim 25 is similar to claim 1. Specifically, claim 25 recites means for comparing a frequency value relative to a desired frequency value. For reasons similar to those discussed above with respect to claim 1, Majos taken in view of Dieguez fails to teach or suggest the means for comparing recited in claim 25. Therefore, Majos taken in view of Dieguez fails to teach or suggest the system of claim 25. Moreover, since the Office Action provides no other evidence sufficient to support its obviousness position with respect to claim 25, Applicant's representative respectfully submits that claim 25, as well as claims 26-28 depending therefrom are patentable.

Claim 30 recites determining a frequency value for a signal that represents a frequency of the signal. In rejecting claim 30, the Office Action contends that signals H+ and H- disclosed in Majos read on frequency values (See Office Action, Page 8). Applicant's representative respectfully submits that in claim 30, the frequency value determined represents a frequency of a signal. Majos fails to teach or suggest that either H+ or H- represents a frequency of a signal. Instead, in Majos, H+ and H- represent results of a comparison between two signals at 1E (e.g., Din) and 1H (See Majos, Col. 6, Line 60-Col. 7, Line 20).

In an apparently alternative argument, the Office Action states that Majos does not teach or suggest that a frequency value represents a frequency value of a signal, as recited in claim 30, but contends that Dieguez makes up for the deficiencies of Majos (See Office Action, Page 8, citing Col. 6, Lines 40-45 of Dieguez). However, the cited section of Dieguez discloses that signals can include encoded information about the magnitude of difference between two clock

signals (See Dieguez, Col. 6, lines 40-45). Regardless of what information may be represented by the encoded signals of Dieguez, nothing in Dieguez teaches or suggests determining a frequency value for a signal that represents a frequency of the signal based on (i) output samples received at a detector that correspond to time instances of the signal residing within a single period of the signal, and (ii) predetermined and spaced apart time intervals, as recited in claim 30. In fact, Dieguez is silent on how the encoded information is determined. Thus, Majos taken in view of Dieguez fails to teach or suggest determining a frequency value for a signal, as recited in claim 30. Moreover, since the Office Action provides no other evidence sufficient to establish a *prima facie* case of obviousness with respect to claim 30, Applicant's representative respectfully submits that claim 30, as well as claims 31-35 and 37 depending therefrom are patentable.

For at least the reasons stated above, claims 1, 2, 9, 11, 13, 14, 25, 26-28, 30-35 and 37 are patentable. Therefore, withdrawal of the rejection of claims 1, 2, 9, 11, 13, 14, 25, 26-28, 30-35 and 37 is respectfully requested.

II. Rejection of Claims 3-8 and 10 under 35 U.S.C. 103(a)

Claims 3-8 and 10 have been rejected under 35 U.S.C. 103(a) as being unpatentable over Majos in view of Dieguez, in further view of U.S. Patent No. 6,326,826 to Lee et al ("Lee"). Withdrawal of this rejection is respectfully requested for at least the following reasons.

Claims 3-8 and 10 depend from claim 1. The addition of Lee does not make up for the aforementioned deficiencies of Majos taken in view of Dieguez with respect to claim 1. In rejecting claims 3-8 and 10, the Office Action relies on Lee solely for Lee's disclosure of detection cells 22' (See Office Action, Page 10). Accordingly, for the reasons discussed above with respect to claim 1, Majos taken in view of Lee fails to make claims 3-8 and 10 obvious, and claims 3-8 and 10 are patentable. Thus, the rejection of claims 3-8 and 10 should be withdrawn.

III. Rejection of Claims 15, 20-24 and 38 under 35 U.S.C. 103(a)

Claims 15, 20-24 and 38 have been rejected under 35 U.S.C. 103(a) as being unpatentable over Majos in view of Lee. Withdrawal of this rejection is respectfully requested for at least the following reasons.

Regarding claim 15, the Office Action contends that the output of an XOR gate 10 and the output of a delay line 12 disclosed in Majos corresponds to a plurality of delay elements recited in claim 15 (See Office Action, Page 12). Specifically, the Office Action contends that the output of XOR gate 10 goes to delay line 12 and a "0" delay path 10 to 14, which can be thought of as a delay element with "0" delay (See Office Action, Page 13). There is no teaching or suggestion in Majos to support the argument that the output of XOR gate 10 provided to flip flops 14 and 15 is delayed by "0" and therefore reads on a delay element. Applicant's representative respectfully submits that even under the broadest reasonable interpretation of "delay element," a connection that does not provide any known amount of delay to a signal (e.g., the connection between XOR gate 10 and flip flops 14 and 15) cannot correspond to a delay element, as recited in claim 15. Basically, the Office Action is alleging that a function can be met by providing a different structure if such structure performs function (the "O" delay). This proposition seems in reasonable to one of ordinary skill in the art. For instance, why include something to provide a delay if it has no delay but instead performs a particular logic function?

Furthermore, the Office Action argues that in an alternative argument, one of ordinary skill could put on more delay elements disclosed in Lee in the path of 10 to 14 for a different design, and such a modification is possible within the scope of Majos and can provide better sampling of H (See Office Action, Page 13). Applicant's representative respectfully disagrees. The Office Action fails to provide a rational underpinning that explains how adding additional delay elements between XOR gate 10 and flip flop 14 disclosed in Majos would provide better sampling of signal H. Thus, the Office Action fails to provide the necessary articulated reasoning with some rational underpinning to support the legal conclusion of obviousness (35 U.S.C. §103) consistent with the mandates of *KSR International Co. v. Teleflex Inc.* 550 U.S. ___, 82 USPQ2d 1385 (2007). Applicant's representative respectfully submits that such an addition of a delay element would be completely superfluous, and that the only reason to do so appears to be an application of improper hindsight to make claim 15 obvious (once again impermissibly using claim 15 as a "template."). Accordingly, claim 15, as well as claims 20-24 and 38 depending therefrom, are patentable.

Additionally, claim 38 recites that the frequency value is expressed in units of an inverse of a period of an input signal. In rejecting claim 38, the Office Action admits that H+ and H- are

not expressed in units of an inverse period, but contends in a second embodiment (illustrated in FIG. 5) of Majos, $H+H=00$ implies that signals at 1E (e.g., Hr) and 1H have the same frequency, and it is possible for one of ordinary skill to express the frequency in units of Hertz (Hz; See Office Action, Page 14). In such a situation, the Office Action must assume that the frequency of a clock signal (e.g., Hr) is known. Applicant's representative respectfully submits that the Office Action's reasoning clearly illustrates a deficiency of the system taught in Majos, which highlights differences between the system recited in claim 38 and the system of Majos that weigh in favor of a conclusion of nonobviousness. In claim 38, a frequency value is expressed in units of an inverse of a period of an input signal. There is no requirement in claim 38 (either expressed or implied) that the frequency value (e.g., the inverse of a period) of the input signal is known. Therefore, Majos does not make claim 38 obvious since Majos does not teach or suggest that the frequency of $H+$ or $H-$ is expressed in units of an inverse of a period of an input signal, in contrast to the frequency value recited in claim 38.

For at least the reasons stated above, claims 15, 20-24 and 38 are patentable. Thus, withdrawal of the rejection of claim 15, 20-24 and 38 is respectfully requested.

IV. Allowable Subject Matter

Claim 18 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Applicant's representative acknowledges allowance of claim 18 with appreciation. Claim 18 has been incorporate into independent claim 15. Allowance of claim 15 and claims 20 – 24 and 38 is respectfully requested.

V. Conclusion

In view of the foregoing remarks, Applicant respectfully submits that the present application is in condition for allowance. Applicant respectfully requests reconsideration of this application and that the application be passed to issue.

Should the Examiner have any questions concerning this paper, the Examiner is invited and encouraged to contact Applicant's undersigned attorney at (216) 621-2234, Ext. 106.

Fees due for this Amendment are being charged to a Deposit Account via a separate transmittal. No additional fees should be due for this response. In the event any fees are due in connection with the filing of this document, the Commissioner is authorized to charge those fees to Deposit Account No. 08-2025.

I hereby certify that this correspondence is being transmitted to the U.S. Patent and Trademark Office via electronic filing on September 23, 2008.

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